MEXICAN CLIMATOLOGICAL DATA.

Through the kind cooperation of Señor Manuel E. Pastrana, Director of the Central Meteorologic-Magnetic Observatory, the monthly summaries of Mexican data are now communicated in manuscript, in advance of their publication in the Boletin Mensual. An abstract, translated into English measures, is here given, in continuation of the similar tables published in the MONTHLY WEATHER REVIEW since 1896. The barometric means have not been reduced to standard gravity, but this correction will be given at some future date when the pressures are published on our Chart IV.

Mexican data for May, 1900.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.			Wind.	Cloud.
	Feet.	*Inch.*	*° F.*	*° F.*	*° F.*	*%*	*Inch.*		
Culiacán Rosales (Sinaloa)	112	29.70	99.5	65 5	81.5	44	.....	w.	e.
Leon (Guanajuato)	5,934	24.27	91.6	46.6	71.8	31	0.31	se.,nw.	ne.
Mexico (Obs. Cent.)	7,472	23.05	85.6	49.1	65.3	49	1.56	n.	ne.,nw.
Morelia (Seminario)	6,401	23.97	87.6	48.4	67.8	49	0.33	w.	w.
Puebla (Col. Cat.)	7,112	23.36	85.3	47.8	68.7	54	1.48	ene.	ne.
Saltillo (Col. S. Juan)	5,399	24.75	89.2	53.6	71.1	59	0.26	nne.	sw.
San Isidro (Hac. de Guanajuato)	.....	.....	81.5	64.4	.....	.....	1.26	w.	.....
San José del Cavo (B C.)	.....	.....	87.8	70.7	78.4	.....	.....	s.	e.
Silao	6,063	24.24	87.3	55.8	72.3	52	0.51	se.	w.
Zapotlan (Seminario)	5,078	25.08	92.1	47.8	72.9	41	0.30	sse.	w.

SPECIAL REPORT ON THE FLOODS IN THE BRAZOS RIVER VALLEY, TEX., APRIL 27 TO MAY 17, 1900; ALSO FRESHETS IN OTHER STREAMS.

By I. M. CLINE, Local Forecast Official and Section Director.

The growing season of 1900, to date, appears to have been the most unfavorable to the extensive agricultural interests throughout the lower Brazos River Valley for nearly fifty years. The precipitation in the Brazos drainage basin has been excessive at most stations in all months this year. The months of April and May were characterized by two overflows of the Brazos River which were the most extensive and destructive in places that have occurred in nearly fifty years, with the exception of the unprecedented flood of July, 1899.

It was noted in the report on floods in the Colorado River Valley during April, 1900, published in the MONTHLY WEATHER REVIEW for that month, that heavy rains fell throughout the upper portion of the Brazos drainage basin, April 5, 6, and 7. The run off from these rains filled the upper portion of the Brazos River nearly bank full. This volume of water moved southward and reached the central and lower portions of the Brazos during the third decade in April. Floods from the upper portion of the Brazos seldom overflow the banks of the river south of McLennan County, unless heavy rains occur over the central and southern portions of the Brazos Valley simultaneously with the advent of the waters from the upper portion of the river in these sections. Heavy rains throughout Texas, April 22, filled nearly all small streams. Showery weather, with heavy rains in some localities, from April 23 to 26, inclusive, maintained streams nearly bank full. These conditions were followed by excessive rains, April 27 and 28, throughout the Brazos drainage basin which caused unprecedented floods along some of the tributaries of the Brazos in the central portion of the State, and also resulted in an extensive overflow of the Brazos River which commenced south of Waco, April 28, and passed into the Gulf of Mexico May 17, 1900.

The following stations report 3 inches or more of precipitation during the forty-eight hours ending 8 a. m., April 28, 1900; Alvin, 5.08; Anna, 4.20; Beaumont, 3.00; Coleman, 3.00; Forestburg, 3.90; Gainesville, 3.83; Hewitt, 6.05; Houston, 3.40; Hulen, 3.70; Saginaw, 3.05; Sugarland, 3.10; Temple, 5.95; Waco, 4.40; and Wichita Falls, 3.33.

The rainfall in Texas from April 22 to 30, inclusive, is given in the following table:

Station.	Rainfall.	Station.	Rainfall.	Station.	Rainfall.
	Ins.		*Ins.*		*Ins.*
Abilene	2.80	Emory	2 36	Longview	5.05
Alpine	0.12	Estelle	2.29	Luling	5.37
Alvin	6.00	Fort Clark	2.00	Mann	4.77
Alice	T.	Fort McIntosh	2.35	Menardville	0.00
Amarillo	1.49	Fort Ringgold	2.03	Mount Blanco	0.03
Anna	4.95	Fort Stockton	0.00	Nacogdoches	4.38
Anson	1.75	Fort Worth	3.23	New Braunfels	6.42
Arthur City	1.03	Forestburg	4.40	Palestine	4.21
Austin	2.52	Gainesville	5.73	Panter	3.12
Ballinger	4.60	Galveston	3.32	Paris	0.48
Beaumont	4.00	Georgetown	4.45	Point Isabel	0.50
Beeville	0.87	Grapevine	3.50	Rhineland	2.89
Big Springs	2.16	Greenville	3.18	Rockisland	3.84
Blanco	2.10	Hale Center	1.39	Runge	3.81
Boerne	5 82	Hallettsville	1.97	Sabine	2.70
Bowie	4.43	Haskell	3.70	Saginaw	5.25
Brazoria	2.76	Hearne	4.40	San Antonio	4.72
Brenham	4.30	Henrietta	2.98	San Marcos	4.70
Brighton	1.16	Hewitt	9.80	Santa G. Ranch	0.92
Brownwood	3.75	Hondo	2.85	Sugarland	4.81
Burnet	2.99	Houston	4.32	Sulphur Springs	1.41
Camp Eagle Pass	3.70	Hulen	7.25	Temple *a*	8.01
Coleman	4.51	Huntsville	4.05	Temple *b*	7.94
Colorado	3.21	Ira	1.33	Texarkana	4 24
Columbia	3.73	Jacksonville	5.10	Tulia	1.10
Corpus Christi	0.19	Jasper	3.95	Turnersville	2.60
Corsicana	3.46	Junction	4.20	Tyler	3.10
Cuero	4.25	Kent	0.16	Victoria	1.65
Dallas	2.40	Kerrville	3.33	Weatherford	3.04
Danevang	4.79	Lampasas	3.57	Waco	6.10
Dublin	1.53	Langtry	3.34	Waxahachie	2.45
Duval	3.97	Llano	2.83	Wichita Falls	3.75
El Paso	T.				

The geographical distribution of the rainfall which caused the floods in the Brazos Valley, April 27 to May 17, 1900, is shown on fig. 1, which has been drawn to represent the rainfall as given in the accompanying table. The rainfall in Texas from May 1 to 13, inclusive, was very light, so that the extent of the flood was not increased by rains during its progress southward. Heavy rains fell over the State May 14 and 15, but the crest of the flood was so far south that these did not affect the stage of the river in the locality of the overflow.

The distribution of pressure coincident with the rains from April 22 to 30, 1900, inclusive, may be summed up as follows: On April 22 the barometer was low throughout the Rocky Mountain region and west Gulf States, with the center of the disturbance over Colorado and Wyoming; an area of high pressure covered the eastern portion of the country. The low pressure area continued over the eastern Rocky Mountain slope and Texas during April 23, 24, 25, and 26, with slight changes in intensity and position of its center. During this time the crest of high pressure remained over the Lake region. From 8 a. m., April 26, to 8 a. m., April 27, the area of high pressure extended southward and covered the country east of the Mississippi River from the east Gulf coast to the Lake region; the barometer fell about one-tenth of an inch

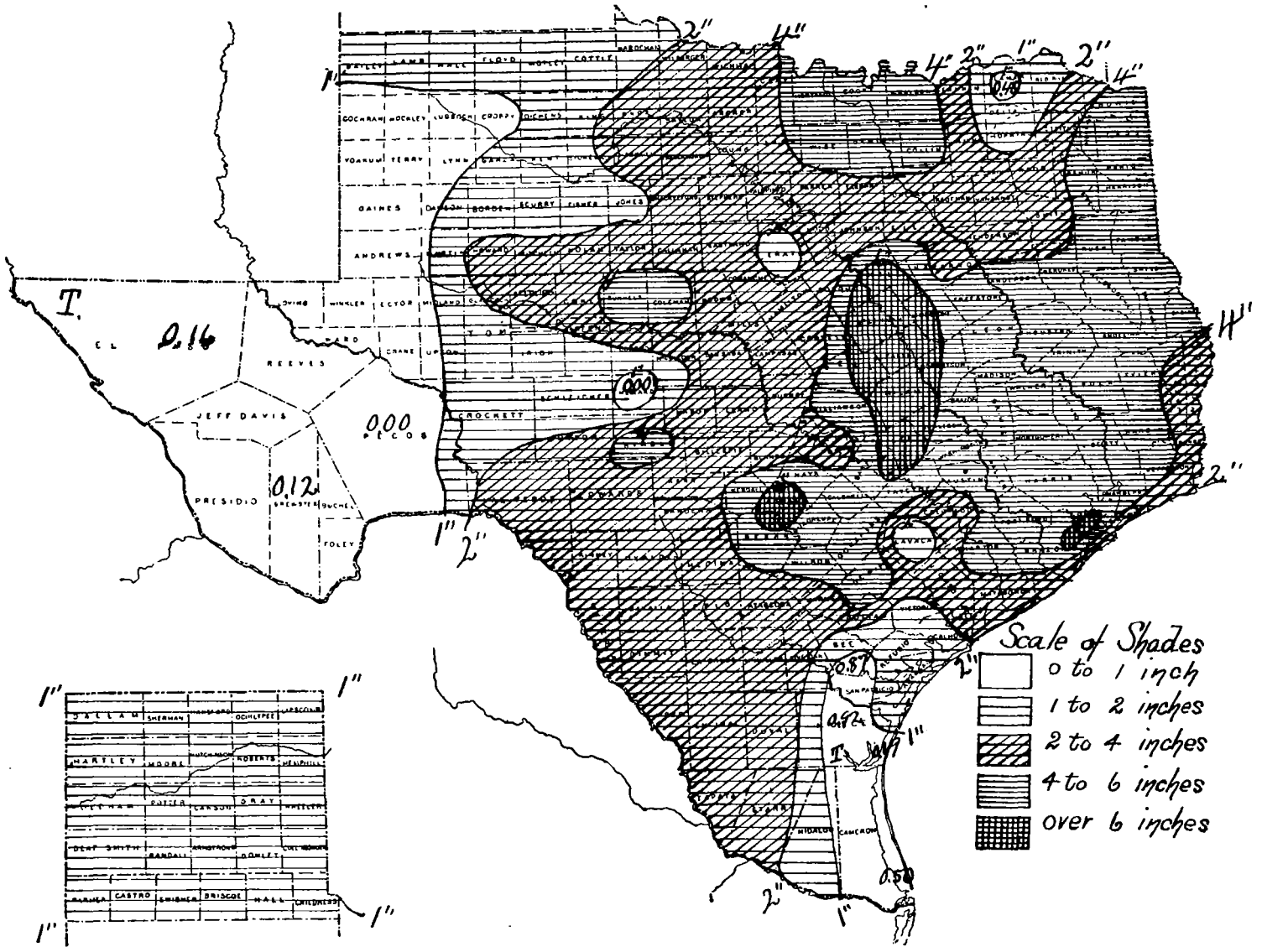

FIG. 1.—Geographical distribution of rainfall.

throughout Texas, with the center of storm development over the western portion of the State. From 8 a. m., April 27, to 8 a. m., April 28, the barometer had risen generally throughout the country; the storm center had moved to southeastern Texas and showed about the same relative intensity as that shown on the preceding date. A well-defined high pressure area was moving southward over the Rocky Mountain region. The low pressure area continued over southeastern Texas causing showers during April 29 and 30, but by May 1 it had moved eastward and the high barometer from the Northwest covered Texas, accompanied by clear and cool weather. The heavy rains of April 27 and 28 traversed the State from the northwest to the southeast. Over the central portion of the Brazos drainage basin the heavy rains occurred both on April 27 and 28, while in the northwest portion of the State they occurred only on the 27th, and in the southeast portion on the 28th.

The conditions shown on the weather charts of April 27 and 28 are such as generally give precipitation over Texas. However, we meet with the same difficulties which have confronted us on the occasion of previous floods in Texas, in seeking for an explanation of the causes of the heavy rains at Temple, Hewitt, and Waco, and at places in that section where the rainfall was evidently much greater than at the stations where measurements were made. The distribution of pressure on April 27 was of the same type as that which existed at the time of the occurrence of the heavy rains of April 7 and 8, 1900. The gradients on April 27, were, however, less steep, and the center of low pressure was farther to the eastward. The heavy rains in the former case occurred generally at elevations above 500 feet, while in the present case the territory which they covered was generally below 500 feet elevation. The heaviest rains were near the 500-foot contour line, and where there is a steep gradient to the westward the increase in elevation being about 1,000 feet between the ninety-seventh and ninety-ninth meridians in the vicinity of the thirty-first and thirty-second parallels of latitude.

Freshets were general throughout the central portion of the drainage basin of the Brazos River prior to the heavy rains of April 27 and 28 as a result of previous rains. With these conditions existing, the excessive rains of April 27 and 28 made it apparent that serious overflows were likely to occur along the Brazos River, and the following warning was issued, April 28, 1900, and distributed as widely as possible by telegraph and mail.

Excessive rains throughout Brazos drainage basin will probably cause decided rise in Brazos River, overflowing much low land from McLennan County south to the Gulf during next ten days. Please warn residents along river.

Local floods along tributaries to the Brazos River in Bell,

Milam, Falls, and McLennan counties, April 27, made it evident that there were other local rains which were much heavier than any of those reported from stations where measurements were made. On the afternoon of April 27 Waco was visited by a phenomenally sudden and destructive flood. More than one-half of the town was entirely covered with water, ranging in depth from 2 feet in the moderately elevated sections to 5 or 6 feet in the lower districts. This flood came from Waco creek and Barrows branch, two small streams which have their sources on a plateau to the west or southwest of Waco in McLennan County. The floods from these creeks swept down suddenly with a 15-foot rise in fifteen minutes. Seven persons were drowned in Waco on this date (April 27), and the value of buildings destroyed amounted to $15,000. It is reported that this flood has never been equaled in that locality; there was one very much like it in 1885. The flood in the present instance came and subsided within about one hour. In Falls County the streams were higher than for twenty-five years. In Bell County they were higher than they had been in forty-seven years; many bridges were washed away and other damage done. In Milam County the streams were higher than in July, 1899. The losses of stock were heavy in Falls, Bell, and Milam counties.

The waters from Bell, Milam, Robertson, Brazos, and Burleson counties which entered the Brazos River through Little River, the Little Brazos River, and other streams in that section caused a flood in the main Brazos in the vicinity of Stone City, Brazos County, on April 28. Behind this came the flood resulting from the rains in Coryell, McLennan, and Falls counties. The latter flood, augmented by the more distant waters from Little River and its tributaries, the Little Brazos River and other streams carrying waters from the district visited by the heavy rains, was the greater of the two. The two floods moved southward with an interval of two to five days between their crests until within about 50 miles of the mouth of the river where they united. The crest of the main flood reached Stone City, Brazos County, April 30, when the river stood only 2.5 feet below the flood of July, 1899. The crest of the flood passed through Brazos and Burleson counties May 1, and overflowed much low land. It reached the vicinity of Navasota, Grimes County, May 3. On May 4 the river was out over all low lands and still rising in the neighborhood of Brookshire, Waller County. May 5, all bottoms in the vicinity of Wallis, Austin County, were overflowed to a depth ranging from 3 to 15 feet. Most of the bottom farms in the vicinity of San Felipe, Austin County, were reported under water May 5, with the river rising at the rate of 1 inch per hour. On the same date reports from Richmond, Fort Bend County, stated that the river was higher than in many years, with the exception of July, 1899. May 6, a number of farms in Fort Bend County were overflowed, and levees were being constructed as far as practicable. The rise continued in Fort Bend County, and on May 7 broke over the levees in places. A portion of the cemetery at Richmond was submerged. On May 8 the river commenced falling at Richmond. The crest of the first flood reached Columbia, Brazoria County, about May 9, but the river had not commenced falling when the rise due to the second flood reached that place May 10. At all points north of Columbia there was a fall in the river between the crests of the two floods. The crest of the flood reached Columbia, May 14, when the stage of the river was reported only 1.8 feet below the flood of July, 1899. The flood entered the Gulf of Mexico about May 17. The crest of the flood was nearly twenty days in passing from Waco to the mouth of the river.

The excessive rains and overflows combined, necessitated replanting one-third of the cotton that had been planted in the counties bordering on the Brazos River south of McLennan County. Some farms in the bottoms have been abandoned for the season. In places the lands were damaged to a greater extent than by the flood of July, 1899.

The flood warning already referred to was timely and resulted in great benefit. No loss of life was reported, except from Waco. Household goods, farming implements, stock, and other property were moved out of the Brazos bottoms and losses averted. About all the damage resulting from this flood was the loss of planted crops and washing the land, except that which occurred along tributaries of the Brazos on April 27, already mentioned.

The following reports from correspondents are interesting in this connection:

Stone City.—C. A. Glenn: The flood of April and May, this year, was within 2.5 feet of that of July, 1899, but the land was damaged more than in 1899.

Bryan.—M. W. Sims: I own a farm in this (Brazos) county about three miles above Stone City, and one in Burleson County about three miles south of Stone City. I have raised forty-one crops in the Brazos bottoms, but have never seen a year like this. I have 200 acres in this county and 250 in Burleson County that I can not even ride over (May 20) and do not expect to plant at all. Our high water this year was about like that of 1885. At the time your warning came we, in this locality, were anticipating an overflow, in fact water was out in low places, but below here, say fifty miles, people were greatly benefited by your bulletin.

Chappelhill.—Postmaster: The warning was received and immediate action was taken to save property. The value of property saved amounted to $1,000.

Columbia.—J. S. Rogers: Your telegraphic warning was received and distributed throughout this section and it was heeded. Stockmen took advantage of it in time and drove all stock out of the bottoms to higher land. The value of stock thus saved is estimated at $60,000.

The Galveston Tribune of May 7, 1900, commenting on the Brazos River flood, says:

> One thing that stands out strongly just now is the great value of the Weather Bureau's flood bulletins. The breaking of the dam at Austin was no sooner known than the Bureau sent telegrams broadcast through the Colorado Valley warning farmers and stockmen that a flood was coming. As a result stock was hurried out of the lowlands, and when the high waters came the damage was much less than would have been entailed, but for the warning.
>
> Saturday a week ago a general flood warning was sent through the lower Brazos Valley. Many of the old timers in the Brazos bottoms thought the Weather Bureau people were unduly alarmed and that the waters would not rise as much as the Bureau predicted, but now they are discovering that the Bureau was rather conservative in its prediction, for the situation is worse than expected and the amount of land submerged is the greatest in many years, excepting, of course, last year's calamity.
>
> It will not be long before the Weather Bureau will be in a position to give more accurate and detailed flood information. Arrangements are now under way and will soon be completed for official reports from various points along the rivers of the rise and fall of the waters by feet and inches. With a complete system of measurements by water gages it will be possible to forecast the extent of each flood and to notify the people down the river of just how much of a rise they must prepare to meet.
>
> The flood service along the Mississippi and its tributaries is of great value. The same system will soon be in force along the big rivers of Texas.

No chart has been drawn to represent the area flooded by these overflows. The necessary data have, however, been collected, and the area is about two-thirds of that overflowed in July, 1899, and reference is made to the chart of that flood, fig. 2, published in the MONTHLY WEATHER REVIEW, July, 1899, page 297.

FRESHETS.

There were freshets in the drainage basins of the Red, Trinity, and Colorado rivers as a result of the rains of April 27 and 28. There was quite an overflow of the Trinity River in the vicinity of Dallas where the stage of the river, April 30, was reported 52 feet above the low water mark. One person was drowned at Dallas. South of Dallas the volume of water did not much exceed the carrying capacity of the channel of the river.